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(54) Portable post-mix dispenser unit.

(57) A post-mix beverage dispensing system is disclosed which comprises a cabinet which has top, front, back, side and bottom panels for housing

various components. The various components include a carbonator (23) for producing carbonated water by mixing cooled water with CO<sub>2</sub>. A cooling

reservoir (22) cools potable water which is supplied to the carbonator (23) from a portable tank (27). The portable tank stores the potable water which is supplied to the carbonator and is easily detachable from the cabinet. A CO<sub>2</sub> tank (29) supplies CO<sub>2</sub> to the carbonator. A syrup package (51, 52, 53) dispenses a selected syrup. A first pipe (24) connects the portable tank with the carbonator and is arranged for cooling of the potable water by the cooled water in the cooling reservoir. Cooled water can thus be continuously supplied to the carbonator.

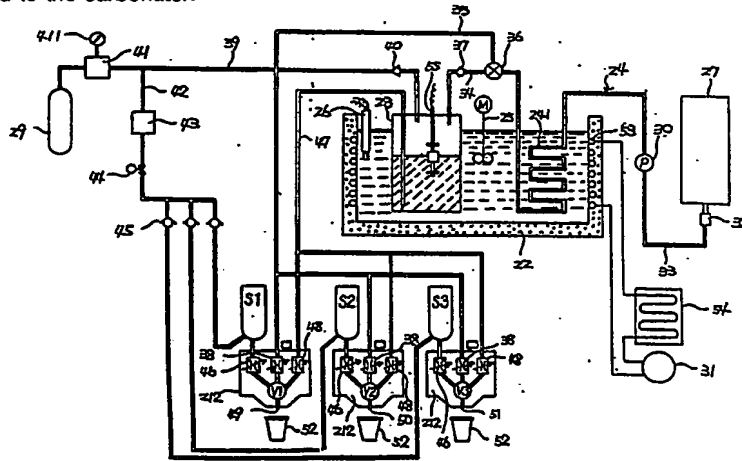


Fig. 7

## PORTABLE POST-MIX BEVERAGE DISPENSER UNIT

### TECHNICAL FIELD

The present invention relates to post-mix beverage dispensers which are compact, portable and suitable for use in small offices or small volume locations. More particularly, the present invention relates to a compact post-mix beverage dispenser unit which may be disposed on a counter top in the above-mentioned environments and a cooling pipe which passes through the interior of a cooling reservoir and a closed-type portable tank for providing with water.

### BACKGROUND OF THE INVENTION

A post-mix beverage dispenser generally has a cooling reservoir for always cooling potable water with an evaporator therein. For example, U.S. Patent No. 4,493,441 shows such a post-mix beverage dispenser.

In the above post-mix beverage dispenser, since the evaporator for cooling potable water is disposed within the cooling reservoir the cooling reservoir can not but be fixedly disposed in the interior of the post-mix beverage dispenser. Accordingly, potable water is conveyed to the location at which the post-mix beverage dispenser should be and supplied to the cooling reservoir.

However, the above post-mix beverage dispenser has several problems; one of them is that it takes a certain time until potable water is cooled after supplied to the cooling reservoir, another one is that the cooling reservoir is not sanitary because is open-type, and the other one is that the post-mix beverage dispenser easily can not be connected to a building water supply for automatic refill of the cooling reservoir.

### SUMMARY OF THE INVENTION

It is a primary object of the present invention to provide a portable post-mix beverage dispenser unit which continuously can supply beverages for users.

It is another object of the present invention to provide a portable post-mix beverage dispenser unit which can easily be maintained to be sanitary.

It is still another object of the present invention to provide a portable post-mix beverage dispenser unit which easily can be connected to a building water supply for refill of a cooling reservoir.

A post-mix beverage dispensing system ac-

cording to the present invention comprises a cabinet which has top, front, back, side and bottom panels for housing various components of the post-mix beverage dispensing system. The various components includes a carbonator for producing carbonated water by mixing cooled water with CO<sub>2</sub>. A cooling reservoir cools potable water which is supplied to the carbonator from a portable tank and the carbonator. A portable tank reserves the potable water which is supplied to the carbonator and is easily detachable from the cabinet. A CO<sub>2</sub> tank supplies CO<sub>2</sub> to the carbonator. A syrup package dispenses a selected syrup. A first pipe connects the portable tank with the carbonator for cooling the potable water which is supplied from the portable tank to the carbonator with the cooled water in the cooling reservoir. A second pipe connects the CO<sub>2</sub> tank with the carbonator for sending CO<sub>2</sub> from the CO<sub>2</sub> tank to the carbonator. A third pipe connects a valve with the carbonator for dispensing carbonated water from the carbonator.

Further optional features and other aspects of the present invention will be understood from the following detailed description of the preferred embodiment of the present invention referring to the attached drawings.

### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a front elevational view of a portable post-mix beverage dispenser unit in accordance with one embodiment of this invention.

Figure 2 is a front perspective view of a portable post-mix beverage dispenser unit of Figure 1 with a front access panel and a top access panel removed to illustrate the compartment of a portable tank and a syrup supply compartment.

Figure 3 is a front view of a portable post-mix beverage dispenser unit of Figure 1 with a front access panel and an additional access panel completely removed to illustrate a portable tank and a syrup supply compartment.

Figure 4 is a top plan view of a portable post-mix beverage dispenser unit of Figure 1 with a top access panel removed to illustrate the compartments for housing the respective component parts of the post-mix dispenser system.

Figure 5 is a left-side elevational view of a portable post-mix beverage dispenser unit of Figure 1 with a left-side main cabinet portion removed to illustrate the compartments for housing the respective component parts of the post-mix beverage dispenser system.

Figure 6 is a vertical cross-sectional view of a portable post-mix beverage dispenser unit of Figure 1 taken along line VI-VI shown in Figure 4 to illustrate the compartment for housing the respective component parts of the post-mix beverage dispenser system.

Figure 7 is a schematic diagram of the mechanical refrigeration system of a portable post-mix beverage dispenser unit of Figure 1.

Figure 8 is a front perspective view of a portable post-mix beverage dispenser unit in accordance with another embodiment of this invention with a front access panel and an additional access plate completely removed to illustrate the compartment of a portable tank and a syrup supply compartment.

Figure 9 is a front perspective view of a portable post-mix beverage dispenser unit of Figure 8 with a front access panel removed to illustrate the compartment of a portable tank and a syrup supply compartment.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to Figures 1-7, the construction of a portable post-mix beverage dispenser unit in accordance with one embodiment of this invention is shown. The portable post-mix beverage dispenser unit has cabinet 20 including front access panel 201, top access panel 202, right-side access panel 203, left-side access panel 204, rear-side access panel 205, bottom access panel 206 and additional access panel 207. Pouring station 21 is located under front access panel 201 and includes drain plate 211, which is used for receiving cups and draining spilt beverage from the cups through a plurality of slits, and dispensing portion 212, which has valve lever 213 extending in front.

Cooling reservoir 22, which is covered with insulating materials, is disposed in cabinet 20 and reserves water used for cooling potable water introduced to carbonator 23 through cooling pipe 24. Carbonator 23, cooling pipe 24, agitator 25 and ice sensor 26 are disposed within the cooling water reserved in cooling reservoir 22.

Portable tank 27 which is used for a drinking water tank, control box 28, CO2 cylinder 29, and a plurality of syrup packages S1, S2 and S3, which are connected with dispensing portion 212, are further disposed at the upper side in cabinet 20. Pump 30, compressor 31 and condenser 32 are disposed at the lower side in cabinet 20. Portable tank 27 is coupled with pump 30 through sealing coupler 32 and first conduit 33. Sealing coupler 32 connects one end of first conduit 33 with portable tank 27 and can disconnect therebetween without

leaking of potable water. Cooling pipe 24 is connected to pump 30 at one end and has meandering portion 241, which is dipped within the cooling water in cooling reservoir 22. The other end of cooling pipe 24 is coupled with second conduit 34 and third conduit 35 through three-way electromagnetic valve 36. Second conduit 34 extends to the interior of carbonator 23 through check valve 37. Third conduit 35 divided into three at the other end and the respective end thereof is coupled with respective valves V1, V2 and V3 through flow control valves 38 in dispensing portion 212.

CO2 cylinder 29 is coupled with the interior of carbonator 23 through fourth conduit 39. Check valve 40 and reducing valve 41 which has pressure gauge 411 are disposed on the way of fourth conduit 39.

Carbonated water is produced in carbonator 23 by mixing cooled water from portable tank 27 with CO2 from CO2 cylinder 29.

Fifth conduit 42 is connected to fourth conduit 39 between check valve 40 and reducing valve 41 at one end and divided into three at the other end. The other ends of fifth conduit 42 is connected to each syrup packages S1, S2 and S3, respectively, and reducing valve 43, cock 44 and check valves 45 are disposed on the way of fifth conduit 42 in order. Reducing valve 43 reduces the pressure of CO2 until 0.4 kg/cm<sup>2</sup> herein. Syrup packages S1, S2 and S3 are coupled with valves V1, V2 and V3 through flow control valves 46, respectively.

Sixth conduit 47 extends to the cooling water in carbonator 23 at the lower position and is divided three at the other end to be coupled with valves V1, V2 and V3 through flow control valve 48, respectively. Nozzles 49, 50 and 51 are connected to respective valves V1, V2 and V3 to pour beverages into respective cups 52.

Evaporator 53 in an refrigerating circuit, which includes at least compressor 31 and condenser 54, is disposed along the outer surface of the inner wall of cooling reservoir 22, and cools the water in cooling reservoir 22. The water in reservoir 22 is cooled until about zero centigrade degree by evaporator 53.

The operation of the above portable post-mix beverage dispenser unit is described below.

When a user puts a cup on drain plate 211 under one of nozzles 49, 50 of the beverage which is selected by user and push one of valve levers 213 corresponding to the selected nozzle, pump 30 and three-way electromagnetic valve 36 simultaneously operate. The potable water in portable tank 27 passes through first conduit 33 and is sent to meandering portion 241 of cooling pipe 24, and thereby cooled with the cooling water in cooling reservoir 22. Thereafter, the potable water is sent to carbonator 23 and is mixed with CO2 which is

sent from CO2 cylinder 29 through fourth conduit 39, and thereby carbonated water is produced in carbonator 23. The volume of carbonated water in carbonator 23 is controlled by float switch 55. If the water level of carbonated water is below a predetermined level, pump 30 operates and the potable water and CO2 are supplied to carbonator 23, and thereby the water level of carbonated water can be maintained at the predetermined level. At that time, water is supplied to carbonator 23 in mist. Carbonated water in carbonator 23 is sent to flow control valve 48 through sixth conduit 47. Potable water is sent to flow control valve 38 through third conduit 35 after passing through three-way electromagnetic valve 36, are sent to flow control valve 46 from one of syrup packages S1, S2 and S3. The volume of carbonated water, the potable water and the syrup are controlled at flow control valve 46, respectively, and are supplied to the corresponding one of valves V1, V2 and V3 to mix each other, then the beverage is poured to cup 52.

If the contents in CO2 tank 29 and syrup packages S1, S2 and S3 are exhausted, the above tank and packages are changed to new ones. Likewise, if the potable water in portable tank 27 is exhausted, sealing coupler 32 is detached from portable tank 27, and the potable water is charged into portable tank 27. Portable tank 27 is attached sealing coupler 32, again, and disposed in cabinet 20. The above exchange of CO2 tank 29 and portable tank 27 is easily made as shown in Figure 4. Portable tank 27 is first pulled outside toward arrow H and then CO2 tank 29 is pulled toward arrow G.

Referring to Figure 8, the construction of a portable post-mix beverage dispenser in accordance with another embodiment of this invention is shown. CO2 tank 29 is completely laid under portable tank 27 to easily be operated.

Referring to Figure 9, the construction of a portable post-mix beverage dispenser in accordance with still another embodiment of this invention is shown. CO2 tank is slantingly laid under portable tank 27 and portable tank 27 is disposed at the top side of cabinet 20.

This invention has been described in detail in connection with the preferred embodiments. These embodiments, however, are merely for example only and the invention is not restricted thereto. It will be easily understood by those skilled in the art that other variations and modifications can easily made.

## Claims

1. A post-mix beverage dispensing system comprising:

a cabinet having top, front, back, side and bottom panels for housing various components of the post-mix beverage dispensing system, said various components including:

a carbonator means for producing carbonated water by mixing cooled water with CO2,

a cooling reservoir means for cooling potable water supplied to a carbonator means from a portable tank means and said carbonator,

a portable tank means for reserving the potable water supplied to said carbonator means and being easily detachable from said cabinet,

a CO2 tank means for supplying CO2 to said carbonator,

a syrup package means for dispensing a selected syrup,

a first pipe means connecting said portable tank means with said carbonator means for cooling the potable water supplied from said portable tank to said carbonator means with the cooled water in said cooling reservoir,

a second pipe means connecting said CO2 tank means with said carbonator means for sending CO2 from said CO2 tank to said carbonator,

a third pipe means connecting a valve means with said carbonator for dispensing carbonated water from said carbonator.

2. The dispensing system of Claim 1 wherein said carbonator means is disposed in said cooling reservoir.

3. The dispensing system of Claim 1 or 2 wherein a sealing coupler means is disposed between said portable tank and said carbonator to enable detachment therebetween without leaking of water.

4. The dispensing system of Claim 1, 2 or 3 wherein a fourth pipe means connects said second pipe means with said syrup package means for supplying CO2 from said CO2 tank to said syrup package means to send syrup to said valve.

5. The dispensing system of Claim 1, 2, 3 or 4 wherein a fifth pipe means is connected to said first pipe means through a three-way electromagnetic valve at its one end and connected to said valve at its other end to send cooled potable water from said portable tank to said valve.

6. The dispensing system of any of Claims 1 to 5 wherein said first pipe means has a meandering portion for quickly cooling potable water.

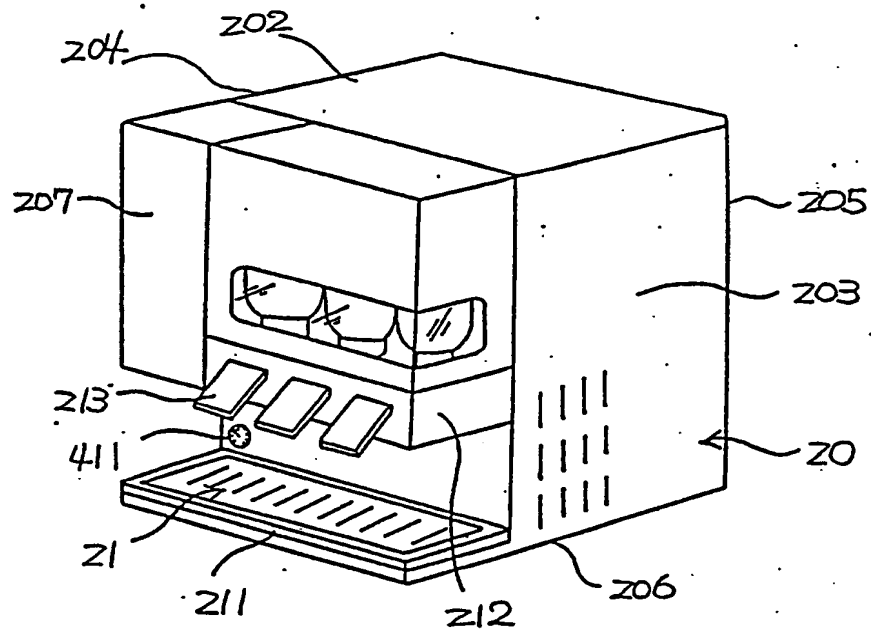


Fig. 1

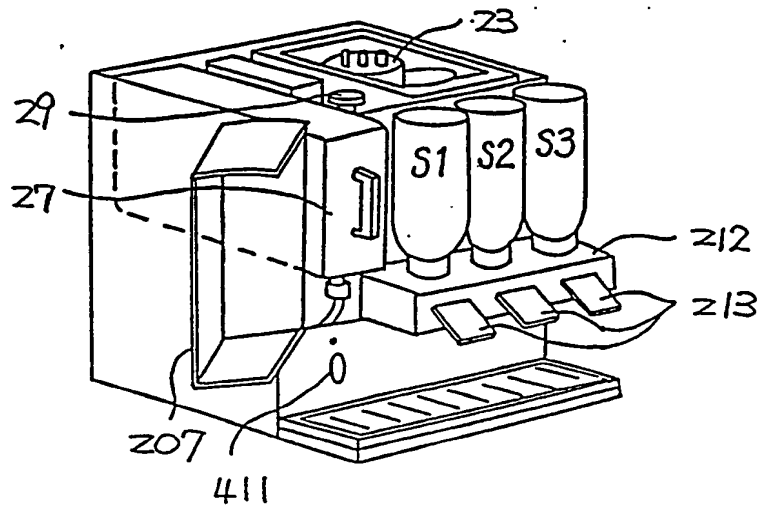


Fig. 2

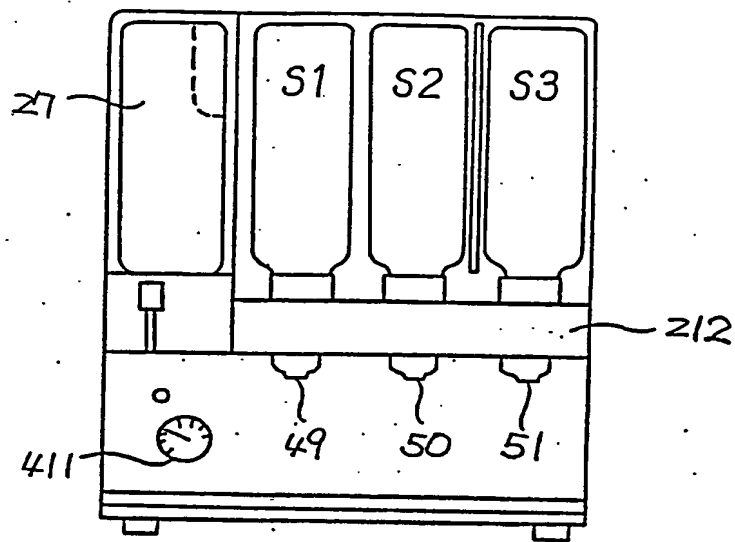


Fig. 3

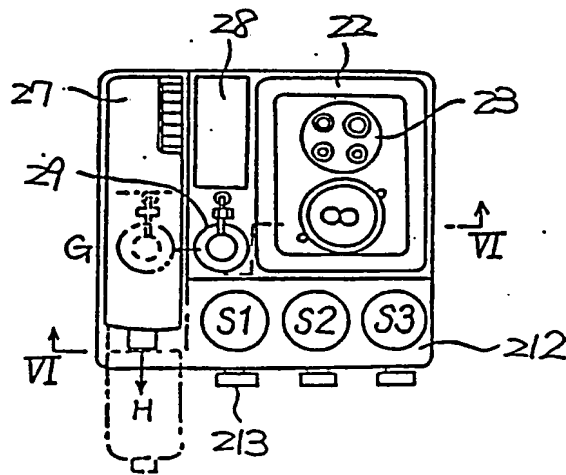


Fig. 4

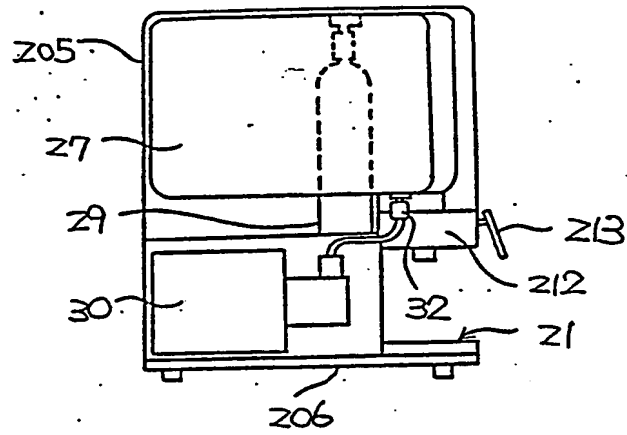


Fig. 5

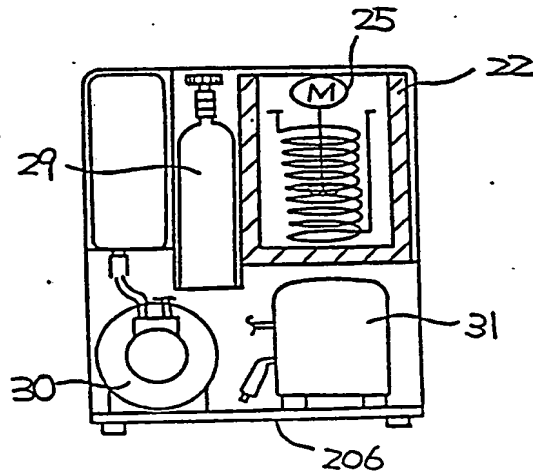


Fig. 6

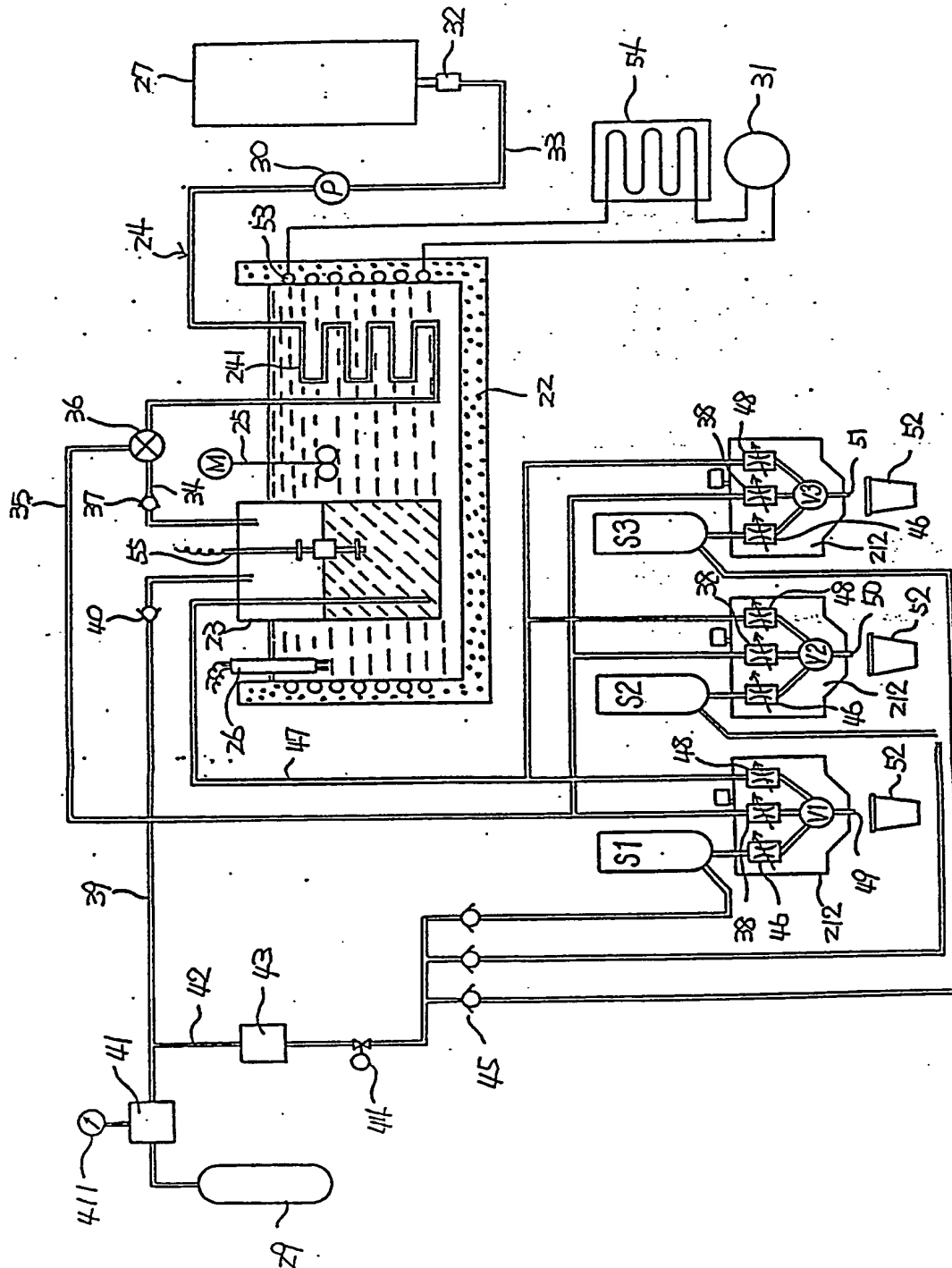


Fig. 7

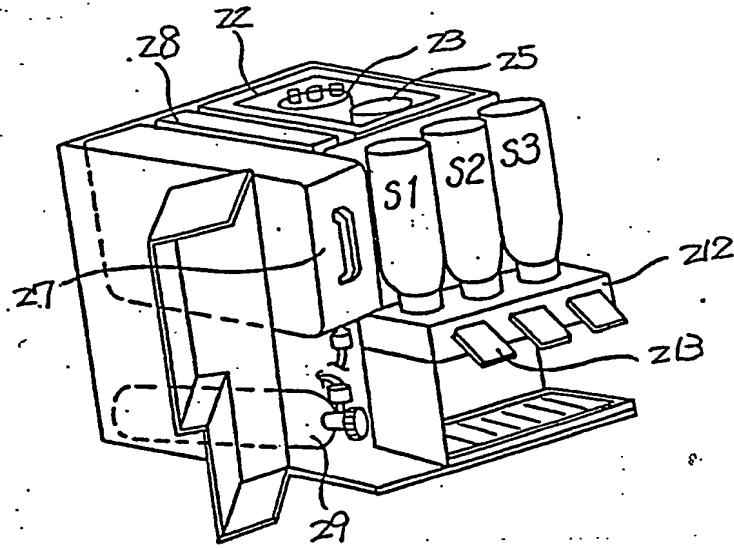


Fig. 8

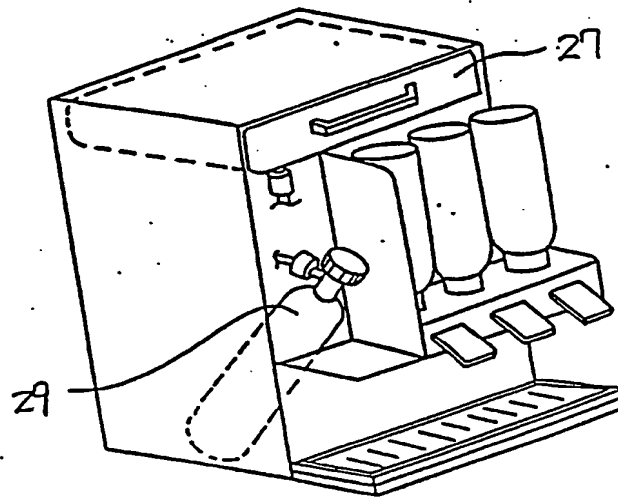


Fig. 9



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## EUROPEAN SEARCH REPORT

Application Number

EP 88 31 1632

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	EP-A-0 102 527 (THE COCA-COLA CO.) * Figure 1; page 5, line 17 - page 7, line 14 *	1,2,4-6	B 67 D 1/00
Y	---	3	
Y	US-A-4 440 318 (BERGER) * Figures 2,4; column 4, lines 6-23; claims 1,5 *	3	
X	---		
X	US-A-3 240 395 (CARVER) * Figure 1; column 3, lines 7-75; column 4, lines 29-46 *	1,2,4-6	
A	---		
A	DE-A-3 346 240 (THE CORNELIUS CO.)		
D,A	EP-A-0 190 811 (THE COCA-COLA CO.) & US-A-4 493 441		
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			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			B 67 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27-02-1989	Examiner DEUTSCH J.P.M.
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			